

Appl. No. : 10/029,712
Filed : Dec. 19, 2001

AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended) An injectable ultrasound contrast agent comprising:

- (a) a suspension of gas filled microbubbles or microballoons in a physiologically acceptable aqueous carrier comprising at least two surfactants; and additives; ~~and stabilizers~~ wherein:
 - (b) the gas is a gas mixture of at least two biocompatible gases A and B;
 - (c) gas B is present in an amount of between ~~0.5% - 50%~~ 50% - 99% by volume;
 - (d) gas B has a water solubility of not more than about 0.5mM at 25 C and one atmosphere and an average molecular weight at least about 4 times that of gas A; and,
 - (e) the balance of the mixture is gas A.

2. (new) The injectable contrast agent of claim 1 wherein the aqueous carrier is water.

3. (new) The injectable contrast agent of claim 1 wherein gas B is perfluoropropane.

4. (new) The injectable contrast agent of claim 1 wherein gas B is selected from the group consisting of perfluoropropanes, perfluorobutanes, perfluorocyclobutanes, perfluoropentanes, perfluorocyclopentanes, perfluoro methylcyclobutanes, perfluorohexanes, perfluorocyclohexanes, perfluoro methyl cyclopentanes, perfluoro dimethyl cyclopentanes, perfluoro heptanes, perfluoro cycloheptanes, perfluoro cycloheptanes, perfluoromethyl cyclohexanes, perfluoro dimethyl cyclopentanes, perfluoro trimethyl cyclobutanes perfluoro triethylamines.

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5. (new) The injectable contrast agent of claim 1 wherein gas B is selected from group consisting of perfluoropropanes, perfluorobutanes, perfluoropentanes, perfluorohexanes and perfluoroheptanes.

6. (new) The injectable contrast agent of claim 1 wherein gas A is selected from oxygen, nitrogen and carbon dioxide.

7. (new) The injectable contrast agent of claim 1 wherein gas A is air.

8. (new) The injectable contrast agent of claim 1 wherein said surfactant is a phospholipid.

9. (new) The injectable contrast agent of claim 1 wherein said surfactant comprises a mixture of phospholipids.

10. (new) An injectable ultrasound contrast agent comprising:

(a) a suspension of gas filled microbubbles or microballoons in a physiologically acceptable aqueous carrier comprising a surfactant comprised of at least one phospholipid wherein:

(b) the gas is a gas mixture of at least two biocompatible gases A and B;

(c) gas B is present in an amount of between .5 - 50% by volume;

(d) gas B has a water solubility of not more than about 0.5mM at 25 C and one atmosphere and an average molecular weight at least about 4 times that of gas A; and,

(e) the balance of the mixture is gas A.

11. (new) The injectable contrast agent of claim 10 wherein the physiological aqueous carrier is water.

12. (new) The injectable contrast agent of claim 10 wherein gas B is perfluoropropane.

13. (new) The injectable contrast agent of claim 10 wherein gas B is selected from the group consisting of perfluoropropanes, perfluorobutanes, perfluorocyclobutanes, perfluoropentanes, perfluorocyclopentanes, perfluoro methylcyclobutanes, perfluorohexanes, perfluorocyclohexanes, perfluoro methyl cyclopentanes, perfluoro dimethyl cyclopentanes,

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perfluoro heptanes, perfluoro cycloheptanes, perfluoro cycloheptanes, perfluoromethyl cyclohexanes, perfluoro dimethyl cyclopentanes, perfluoro trimethyl cyclobutanes perfluoro triethylamines.

14. (new) The injectable contrast agent of claim 10 wherein gas B is selected from group consisting of perfluoropropanes, perfluorobutanes, perfluoropentanes, perfluorohexanes and perfluoroheptanes.

15. (new) The injectable contrast agent of claim 10 wherein gas A is selected from oxygen, nitrogen and carbon dioxide.

16. (new) The injectable contrast agent of claim 10 wherein gas A is air.

17. (new) The injectable contrast agent of claim 10 wherein said surfactant comprises a mixture of phospholipids.

18. (new) The injectable contrast agent of claim 10 wherein gas A and gas B are present in a molar ratio of about 1: 100 to 1000: 1.

19. (new) The injectable contrast agent of claim 1 wherein gas A and gas B are present in a molar ratio of about 1:100 to 1000:1.

20. (new) The injectable contrast agent of claim 10 further comprising additives and stabilizers.